

United States Department of Agriculture

Soil Conservation Service

Program Aid Number 1453

# **'Bison'** **big bluestem**



## 'Bison' big bluestem

'Bison' big bluestem, *Andropogon gerardii* Vitman, has been released cooperatively by the Soil Conservation Service (SCS) and the Agricultural Research Service (ARS) of the US Department of Agriculture (USDA) and the North Dakota and Minnesota Agricultural Experiment Stations.

Original Bison big bluestem plants were collected in south-central North Dakota near Price. The collected plants were grown in comparison with 30 other accessions for 3 years at the ARS Northern Great Plains Research Laboratory, Mandan, North Dakota. Bison was selected over the other accessions because of its uniform plant type, leafiness, plant vigor, and seed yields. It matured earlier than the other accessions and adapted better to northern climates.

Big bluestem is a native, perennial, warm-season, sod-forming grass. It is a major component of the tall-grass vegetation which once dominated the prairies of the Central and Eastern United States. It can be used alone or in mixtures for livestock forage on rangelands, pastures, and haylands. Big bluestem is also excellent for wildlife habitat, critical area seeding, roadside beautification, and erosion control. It can be used in mixtures with other warm-season grasses such as switchgrass, indiangrass, little bluestem, and sideoats grama.

Cool-season grasses such as smooth brome grass and crested, tall, intermediate, and pubescent wheatgrasses are predominant in the area of adaptation; consequently, forage is often in short supply during the summer. Unlike sudangrass or sorghum-sudan hybrids which must be established annually, big bluestem, with proper grazing management, can maintain high performance indefinitely. Big bluestem grows rapidly after June 1 until late summer and provides large quantities of high-quality forage for livestock grazing when high temperatures retard the growth of cool-season species.

### Description

Big bluestem grows 3 to 6 feet tall. Even as a seedling, it can be distinguished from other native grasses by long white hairs on the upper leaf surface near the base of the

blade. Stems are round and usually hairy with a reddish tint at the base. The seed head normally has three finger-like branches resembling a turkey's foot. Bison's stature is shorter than other big bluestem cultivars, and its fine leaf and stem material are typical of northern ecotypes of big bluestem.

### Performance

The phenology, forage quantity, and wildlife habitat potential of Bison have been documented in advanced evaluation studies and field plantings under actual use conditions located throughout North Dakota, South Dakota, and Minnesota. Bison has demonstrated superior winter hardiness and seed yields. Bison will produce mature seed and persist for long periods in low-maintenance stands in areas where it is adapted. At five locations in North Dakota, South Dakota, and Minnesota, Bison yielded 3,600 pounds of dry matter per acre over 18 station years in trials with six other big bluestem cultivars. In these tests, forage yield of Bison was not significantly different from 'Bonilla.' In northern North Dakota at Upham, Bison was the second-ranked cultivar for a 5-year period, indicating its ability over cultivars of southern origin to persist and maintain productivity. In west-central Minnesota at Fergus Falls, Bison matured 20 days earlier than Bonilla and 30 to 48 days earlier than the southern cultivars, 'SD-43,' 'Champ,' 'Pawnee,' 'Kaw,' and 'Roundtree.'

### Establishment

Big bluestem and other warm-season grasses require a soil temperature above 50 °F for satisfactory germination. Optimum time to plant in the area of adaptation is early May to mid-June.

The seed is light and has small awns attached. Debearding the seed removes the awns to produce a free-flowing product. The recommended seeding rate is 7 to 10 pounds of pure live seed per acre or 30 to 40 pure live

seeds per square foot. One pound of nonbearded seed contains an average of 165,000 seeds; debarbed seed contains an average of 191,000 seeds per pound.

The planting site should be free of perennial or noxious annual weeds. A firm, moist seedbed is essential. Firming the soil with a roller packer before seeding ensures that the seed will be placed one-half to three-fourths of an inch deep. Drills equipped with agitators, double disk openers, packer wheels, and depth bands provide the best results for nonbearded seed. Broadcast-packer seeders work well for debarbed seed. No companion crops are recommended. Grazing should be deferred during the establishment year.

Application of fertilizer at seeding time stimulates weed growth and is not recommended. Clipping and timely application of 2,4-D help control weeds during the establishment year. Where labeled for use, atrazine pre-emergence herbicide greatly improves establishment by reducing weed competition; read and follow label instructions.

### Seed Production

Stand establishment can usually be accomplished in one growing season. Seed production can be expected in the second year and will continue indefinitely. The fields should be established in rows 30 to 42 inches apart. Apply irrigation water at the boot stage of growth and immediately after the flowering stage. Apply 60 to 80 pounds of nitrogen per acre; apply phosphorus and potassium according to the results of soil tests. Seed matures in September. Harvest can be accomplished by windrowing in the hard dough stage or by direct harvesting when seed is mature. When direct harvesting, seed must be dried as soon as possible or heat damage may occur. Average purity and germination of debarbed seed are 85 and 75 percent, respectively. Seed yields have averaged 100 pure live-seed pounds per acre under irrigation at the SCS plant materials center, Bismarck, North Dakota.

## Management

Well-established stands of big bluestem, when properly managed and maintained, should not require replanting. Weak stands can be rejuvenated by using proper management practices such as controlled grazing, application of recommended rates of herbicides and fertilizer, and prescribed burning before the beginning of spring growth.

Phosphorus and potassium fertilizer should be applied in accordance with soil tests. Nitrogen should be applied at the rate of 50 to 75 pounds per acre when growth in the spring has reached 4 to 6 inches.

Forage quality will remain high until seed heads emerge. Grazing should begin when grasses reach 12 to 16 inches in height (mid-June to late June). Overgrazing can cause stands to decline; therefore, grazing should be stopped when plants are grazed 8 to 12 inches in height. Leaving this stubble before the onset of frost will allow for storage of carbohydrates in the plant crown and assure production of vigorous plant growth in the spring.

## Adaptation

The projected climatic adaptation of Bison is represented by the shaded area on the adaptation map. Performance outside this area has not been adequately tested.

Bison is well adapted to North Dakota and the northern half of Minnesota on sites where big bluestem is recommended. Annual precipitation for this area ranges from 15 to 30 inches. The early maturity of Bison will extend the area of adaptation of big bluestem farther north than with presently available cultivars.

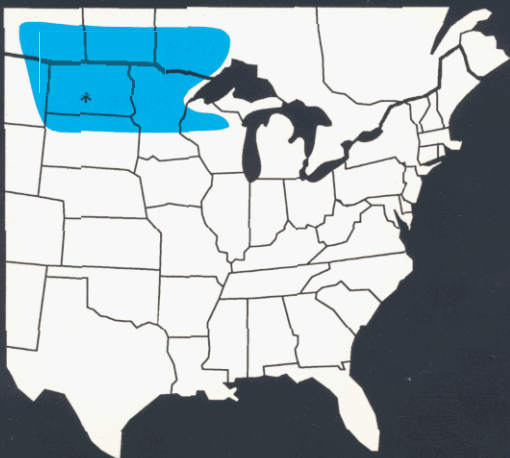
Bison is best suited to fertile, well-drained soils. It is not well adapted to highly saline or alkaline conditions. It will withstand drought stress but is better suited to moderately wet soil.

## Availability

The Agricultural Research Service (Northern Great Plains Research Laboratory, Mandan, ND **58554**) maintains the breeder seed of Bison big bluestem. The Soil Conservation Service Plant Materials Center (P. O. Box **1458**, Bismarck, ND **58502**) maintains the foundation seed. For more information on availability and use of Bison big bluestem, contact your local Soil Conservation Service office or conservation district office.

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### Adaptation of 'Bison' big bluestem



• Point of origin

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